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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
ALI, MOHAMMAD	

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2177	5

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No. 10/014,744	Applicant(s) YE ET AL.	
	Examiner Mohammad Ali	Art Unit 2177	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 26 October 2001.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-24 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1,4,6-10,13-16,19-21 and 24 is/are rejected.

7)☒ Claim(s) 2,3,5,11,12,17,18,22 and 23 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The application has been examined. Claims 1-24 are pending in this Office Action.

Priority

2. Priority has been considered for the provisional application.

Specification

3. Minor informalities: Examiner suggest under Background of the invention to put the sub-headings as "Field of the invention".

Drawings

4. The drawings are objected to because in Fig. 1 "Ye et al" should deleted Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1, 4, 6-10, 13-16, 19-21 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Austin et al. ('Austin' hereinafter), US Patent 5,598,505 in view of Sunil et al. ('Sunil' hereinafter), "An optimal algorithm for approximate nearest neighbor searching".

With respect to claim 1,

Austin discloses a method for classification of data (see col. 5, lines 13-19), comprising:

providing first data from a physical process (see col. 11, lines 2-8, Fig. 4), the first data including a class label associated with attributes of the first data (see col. 12, lines 58 to col. 13, lines 10 et seq);

deriving a dummy cluster from centroid coordinates of the first data associated with the class label (the coarse correction procedure previously described corresponds to a level-0 correction because the centroid of all uncorrected test cepstral vectors is simply the average of the vectors. The centroid is the point in the multi-dimensional

space represented by the coordinates corresponding to the cepstral vector elements, and having coordinates that are the arithmetic means of the coordinates of all points making up the cluster, see col. 11, lines 3-8 et seq, Austin);

determining distance measures between the first data and a plurality of clusters which include the dummy cluster (see col. 12, lines 58 to col. 13, lines 10 et seq);

creating a real cluster in the plurality of clusters if the first data is closest to the dummy cluster (see col.12, lines 58 to col. 13, lines 10, Fig. 6 et seq);

identifying a closest match between second data and the plurality of clusters (see col. 2, lines 4-8, Fig. 6 et seq); and

classifying the second data based on a class label of the closest match from the plurality of clusters (see col. 2, lines 4-8, Fig. 6 et seq).

Austin does not explicitly indicate the claimed "distance measures".

Sunil discloses the claimed distance measures (distance between a point q and a cell c to be in the closest distance between the point and any part of the cell, see paragraph (e), page 575, Sunil).

It would have been obvious to one ordinary skill in the measurement art, at the time of the present invention to combine the teachings of the cited references, because the distance measures of Sunil's teachings would have allowed Austin's system finding nearest neighborhood between the points, as suggested by Sunil paragraph 1, page 573). Distance measures as taught by Sunil improves to find the nearest neighborhood in the constant factor in the computation (see Abstract, Page 573 et seq, Sunil).

As to claim 4,

Austin teaches wherein determining distance measures between the first data and a plurality of clusters includes using one of the group of a weighted Canberra distance, a weighted Euclidean distance, and a weighted Chi-squared distance for the distance measure (see col. 3, lines 31-45 et seq).

As to claim 6,

Austin teaches further including creating a real cluster in the plurality of clusters if the first data is closest to a cluster having a class label different than the class label associated with the first data (see col. 12, lines 58 to col. 13, lines 10, Fig. 6 et seq).

As to claim 7,

Austin teaches wherein identifying a closest match between second data and the plurality of clusters includes calculating a distance measure from one of the group of a weighted Canberra distance, a weighted Euclidean distance, and a weighted Chi-squared distance and using the closest distance measure as the closest match (see col. 3, lines 31-45 and col. 2, lines 4-7 et seq).

With respect to claim 8,

Austin discloses a method of classifying first data from a physical process (see col. 5, lines 13-19), comprising:

providing first data which includes a class label associated with attributes of the first data (see col. 12, lines 58 to col. 13, lines 10 et seq);

deriving a dummy cluster from centroid coordinates of the first data associated with the class label (the coarse correction procedure previously described corresponds to a level-0 correction because the centroid of all uncorrected test cepstral vectors is

simply the average of the vectors. The centroid is the point in the multi-dimensional space represented by the coordinates corresponding to the cepstral vector elements, and having coordinates that are the arithmetic means of the coordinates of all points making up the cluster, see col. 11, lines 3-8 et seq, Austin);

determining distance measures between the first data and a plurality of clusters which include the dummy cluster (see col. 12, lines 58 to col. 13, lines 10 et seq); and

creating a real cluster in the plurality of clusters if the first data is closest to the dummy cluster (see col. 12, lines 58 to col. 13, lines 10 et seq).

Austin does not explicitly indicate the claimed "distance measures".

Sunil discloses the claimed distance measures (distance between a point q and a cell c to be in the closest distance between the point and any part of the cell, see paragraph (e), page 575, Sunil).

It would have been obvious to one ordinary skill in the measurement art, at the time of the present invention to combine the teachings of the cited references, because the distance measures of Sunil's teachings would have allowed Austin's system finding nearest neighborhood between the points, as suggested by Sunil paragraph 1, page 573). Distance measures as taught by Sunil improves to find the nearest neighborhood in the constant factor in the computation (see Abstract, Page 573 et seq, Sunil).

As to claim 9,

Austin teaches identifying a closest match between second data and the plurality of clusters (see col. 12, lines 58 to col. 13, lines 10 et seq); and

classifying the second data based on a class label of the closest match from the plurality of clusters (see col. 2, lines 3-7 and col. 12, lines 58 to col. 13, lines 10 et seq).

As to claim 10,

Austin teaches wherein identifying a closest match between second data and the plurality of clusters includes calculating a distance measure from one of the group of a weighted Canberra distance, a weighted Euclidean distance, and a weighted Chi-squared distance and using the closest distance measure as the closest match (see col. 3, lines 31-45 and col. 2, lines 3-7 et seq).

As to claim 13,

Austin teaches further including creating a real cluster in the plurality of clusters if the first data is closest to a cluster having a class label different than the class label associated with the first data (see col. 12, lines 58 to col. 13, lines 10 et seq).

With respect to claim 14,

Austin discloses a method of classifying first data from a physical process (see col. 5, lines 13-19), comprising:

providing first data which includes a class label associated with attributes of the first data (see col. 12, lines 58 to col. 13, lines 10 et seq);

deriving a dummy cluster from centroid coordinates of the first data associated with the class label (the coarse correction procedure previously described corresponds to a level-0 correction because the centroid of all uncorrected test cepstral vectors is simply the average of the vectors. The centroid is the point in the multi-dimensional space represented by the coordinates corresponding to the cepstral vector elements,

and having coordinates that are the arithmetic means of the coordinates of all points making up the cluster, see col. 11, lines 3-8, Fig. 4 et seq, Austin);

determining distance measures between the first data and a plurality of clusters which include the dummy cluster (see col. 11, lines 58 to col. 13, lines 10 et seq); and

creating a real cluster in the plurality of clusters if the first data is closest to a cluster having a class label different than the class label associated with the first data (see col. 11, lines 58 to col. 13, lines 10 et seq).

Austin does not explicitly indicate the claimed "distance measures".

Sunil discloses the claimed distance measures (distance between a point q and a cell c to be in the closest distance between the point and any part of the cell, see paragraph (e), page 575, Sunil).

It would have been obvious to one ordinary skill in the measurement art, at the time of the present invention to combine the teachings of the cited references, because the distance measures of Sunil's teachings would have allowed Austin's system finding nearest neighborhood between the points, as suggested by Sunil paragraph 1, page 573). Distance measures as taught by Sunil improves to find the nearest neighborhood in the constant factor in the computation (see Abstract, Page 573 et seq, Sunil).

As to claim 15,

Austin teaches identifying a closest match between second data and the plurality of clusters; and classifying the second data based on a class label of the closest match from the plurality of clusters (see col. 2, lines 3-7 et seq).

As to claim 16,

Austin teaches wherein identifying a closest match between second data and the plurality of clusters includes calculating a distance measure from one of the group of a weighted Canberra distance, a weighted Euclidean distance, and a weighted Chi-squared distance and using the closest distance measure as the closest match (see col. 3, lines 31-45 et seq).

As to claim 19,

Austin teaches further including creating a real cluster in the plurality of clusters if the first data is closest to the dummy cluster (see col. 12, lines 58 to col. 13, lines 10 et seq).

With respect to claim 20,

Austin discloses digital storage medium encoded with a computer program which classifies data, the computer program (see col. 5, lines 13-19) comprising:

first instructions for providing first data from a physical process, the first data including a class label associated with attributes of the first data (see col. 11, lines 12, lines 58 to col. 13, lines 10 et seq);

second instructions for deriving a dummy cluster from centroid coordinates of the first data associated with the class label (the coarse correction procedure previously described corresponds to a level-0 correction because the centroid of all uncorrected test cepstral vectors is simply the average of the vectors. The centroid is the point in the multi-dimensional space represented by the coordinates corresponding to the cepstral vector elements, and having coordinates that are the arithmetic means of the coordinates of all points making up the cluster, see col. 11, lines 3-8 et seq, Austin);

third instructions for determining distance measures between the first data and a plurality of clusters which include the dummy cluster (see col. 12, lines 58 to col. 13, lines 10 et seq); and

fourth instructions for creating a real cluster in the plurality of clusters if the first data is closest to the dummy cluster (see col. 12, lines 58 to col. 13, lines 10 et seq). Austin does not explicitly indicate the claimed "distance measures".

Sunil discloses the claimed distance measures (distance between a point q and a cell c to be in the closest distance between the point and any part of the cell, see paragraph (e), page 575, Sunil).

It would have been obvious to one ordinary skill in the measurement art, at the time of the present invention to combine the teachings of the cited references, because the distance measures of Sunil's teachings would have allowed Austin's system finding nearest neighborhood between the points, as suggested by Sunil paragraph 1, page 573). Distance measures as taught by Sunil improves to find the nearest neighborhood in the constant factor in the computation (see Abstract, Page 573 et seq, Sunil).

As to claim 21,

Austin teaches fifth instructions for identifying a closest match between second data and the plurality of clusters (see col. 11, lines 12, lines 58 to col. 13, lines 10 et seq); and

sixth instructions for classifying the second data based on a class label of the closest match from the plurality of clusters (see col. 2, lines 3-7 and col. 11, lines 12, lines 58 to col. 13, lines 10 et seq).

As to claim 24,

Austin teaches wherein the second instructions further include creating a real cluster in the plurality of clusters if the first data is closest to a cluster having a class label different than the class label associated with the first data (see col. 12, lines 58 to col. 13, lines 10 et seq).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. "A heuristic self-organizing map trained using the tanimoto coefficient" issued to S. Garavagli, teaches dummy cluster, distance measures and coordinates.

b. US Patent 6,629,097 B1 issued to D. Keith teaches dummy cluster, distance measures and centroid coordinates.

Allowable Subject Matter

8. Claims 2-3, 5, 11-12, 17-18 and 22-23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record does not teach or suggests wherein initializing the second dummy cluster with the centroid coordinates of the first data if the class label of the first data matches the second class label; updating the centroid coordinates of the second dummy cluster for each first data having a class label that matches the second class label; calculating sample variance of the first data; calculating sample covariance of the

first data; calculating sample mean of the first data; and calculating correlation coefficient from the sample variance, sample covariance, and sample mean of the first data.

Contact Information

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammad Ali whose telephone number is (703) 605-4356. The examiner can normally be reached on Monday to Thursday from 7:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached on (703) 305-9790 or Customer Service (703) 306-5631. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306 for any communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-9600.

Mohammad Ali
Patent Examiner
AU 2177

MA
February 05, 2004